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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,020	02/10/2004	Gregory B. Altshuler	105090-0234	2206
21125 7590 01/08/2007 NUTTER MCCLENNEN & FISH LLP WORLD TRADE CENTER WEST 155 SEAPORT BOULEVARD BOSTON, MA 02210-2604			EXAMINER JOHNSON III, HENRY M	
			ART UNIT	PAPER NUMBER
			3739	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/08/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/777,020

Applicant(s)

ALTSHULER ET AL.

Examiner

Henry M. Johnson, III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 13-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17 and 35-42 is/are allowed.
- 6) ☒ Claim(s) 1-10, 13-16 and 18-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

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A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 20, 2006 has been entered.

Response to Arguments

Applicant's arguments with respect to claims 1 and 14 have been considered but are moot in view of the new ground(s) of rejection. U.S. Patent Application Publication US 2002/0049483 to Knowlton teaches cooling of emitters in a mouthpiece using a liquid medium.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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Claims 1-8, 10, 14, 15, 16, 18, 19-22, 26, 27-32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 98/06456 to Chen et al. in view of U.S. Patent Application Publication US 2002/0049483 to Knowlton. Chen et al. teach an apparatus employing light therapy to treat oral conditions (abstract) including a mouthpiece that surrounds the teeth and gums (Fig. 2) that may be comfortably left inside a patient's mouth for extended times (page 2, lines 32-35) and is made from an elastomeric material such as silicone (page 5, line 8). This is interpreted as a compliant mouthpiece. The radiation source is disclosed as an LED, laser diode, gas discharge lamp or filament bulb (page 3, lines 30-32). The source may be mounted on the mouthpiece or located external to the mouthpiece with the radiation delivered via fiber optics. The means for delivery may include diffusing material (page 3, line 25). The optical fibers deliver the radiation in different directions (page 6, lines 13-15). Portions of the mouthpiece may be highly reflective (page 7, line 21). The sources mounted around the mouthpiece clearly radiate in different directions. Chen et al. incorporates by reference U.S. Patent 5,445,608 that teaches the use of either an internal or external array of light sources and allows use of LEDs or laser diodes operating at two or more wavelengths, and the ability to selectively activate the sources operating at a given wavelength or waveband as desired, so that the light at the different wavelengths or wavebands is provided to the treatment site either sequentially or simultaneously from the light sources (Col. 8, lines 37-45). The sources may be controlled by monitoring the temperature rise of the tissue (diagnostic sensor) (Col. 8, line 8). The current regulation will control the power of the light source. The '608 reference further teaches that waste heat produced by the array of LEDs or LDs disposed on the implantable probe can be employed to augment the PDT by increasing the temperature of the tissue at the treatment site (abstract) and the use of heat sinks (Fig. 1) for heat dissipation. Chen et al. do not disclose the use of cooling fluids. Knowlton teaches a device for delivery of energy to a

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mouth with a fluid provided to the mouthpiece. The fluid can serve as a heat transfer medium and its composition and physical properties can be configured to optimize its ability to dissipate heat. Desirable physical properties of fluid 15 include, but are not limited to, a high heat capacity (e.g. specific heat) and a high thermal conductivity (e.g. conduction coefficient) both of which can be comparable to liquid water in various embodiments or enhanced by the addition of chemical additives known in the art. In other embodiments, fluid 15 may also serve to conduct RF energy and therefore have good electrical conductivity. Fluid 15 can be selected from a variety of fluids including, but not limited to water, saline solution (or other salt aqueous salt solutions), alcohol (ethyl or methyl), ethylene glycol or a combination thereof. Also, fluid 15 can be in a liquid or gaseous state, or may exist in two or more phases and may undergo a phase change as part of its cooling function, such as melting or evaporation (paragraph 0054). It would have been obvious to one skilled in the art to use the cooling fluid as taught by Knowlton in the invention of Chen et al. to supplement the heat sinks already disclosed by Chen et al. Such alternative methods for cooling solid-state radiation devices are well known and obvious.

Regarding claim 8, the disclosure of a gas discharge source inherently produces a polychromatic radiation. Chen et al. teach specific wavelengths for treatment and therefore it is inherent that filters would be employed to obtain the desired wavelength when using a polychromatic source, as one skilled in the art would surely remove wavelengths considered harmful.

Regarding claim 22, the light sources are capable of penetrating various tissues based on the power and time. Even low powers can produce significant fluences over time.

Claims 1, 13, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,862,771 to Muller in view of U.S. Patent Application Publication US 2003/0113684 to Scott and further in view of U.S. Patent Application Publication US 2002/0049483 to

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Knowlton. Muller teaches a toothbrush with a head with bristles and a radiation source in a handle. The location in the handle is disclosed as convenient if the toothbrush is an electrical toothbrush, i.e. having electrical drive means to move the cleaning bristles in a tooth cleaning operation. The electric drive is interpreted as a vibrating mechanism. The radiation is directed in a direction parallel to the bristles either between the bristles or through the optically transparent bristles, thus teaching a plurality of emitters (Fig. 6). The bristles are interpreted as part of the total head and as optical elements and capable of radiating in multiple directions as they are deflected during brushing. A reflecting surface directs the radiation to the bristles (Fig. 6, # 17). Along with the radiation source in the handle, a detector is disclosed for sensing reflected radiation. This detector is interpreted as a diagnostic sensor (Col. 2, lines 38-65). The apparatus is clearly capable of radiating any area within an oral cavity. The radiation source may be a light emitting diode (LED) of known type and filters and mirrors are disclosed in the optical path. The bristles are interpreted as being capable of conforming to a portion of the oral cavity (teeth). Muller does not teach heat dissipation means. Heat generated by LEDs is well known to those with skill in the art. Scott teaches the use of heat sinks for dissipating heat generated by LEDs. Neither Muller nor Scott teaches the use of fluid cooling. Knowlton, as discussed above, disclose such cooling. It would have been obvious to one skilled in the art to use the heat sinks as taught by Scott, and/or the fluid cooling as taught by Knowlton in the handle of the invention of Muller to control the head of the radiating sources that are disclosed as being located in the handle. A skilled artisan would be motivated to look to the heat sink art for means to control or remove the heat of the light source

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,862,771 to Muller in view of U.S. Patent Application Publication US 2003/0113684 to Scott in view of U.S. Patent Application Publication US 2002/0049483 to Knowlton as applied to claim 1

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above and further in view of U.S. Patent 5,133,102 to Sakuma. Muller, Scott and Knowlton are discussed above, but do not teach a contact sensor. Sakuma discloses an electronic toothbrush with a handle, head and bristles and a circuit that energizes a radiation device when the bristles contact the teeth, thus sensing contact and completing the circuit via the body of the user. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the contact sensor as taught by Sakuma in the device of Muller/Scott/Knowlton to activate the device when in the preferred use position, in contact with the oral tissue to prevent extraneous radiation.

Claims 23 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,862,771 to Muller in view of U.S. Patent Application Publication US 2003/0113684 to Scott in view of U.S. Patent Application Publication US 2002/0049483 to Knowlton as applied to claims 1 and 14 above and further in view of U.S. Patent 4,333,197 to Kuris. Muller, Scott and Knowlton are discussed above, but do not teach the use of ultrasonics. Kuris teaches an ultrasonic toothbrush with a handle, head and bristles driven by ultrasonic frequencies (abstract). The handle is designed to remove the heat produced by the ultrasonic generator (Col. 4, lines 28-31). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the ultrasonic generator as taught by Kuris in the device of Muller/Scott/Knowlton to complement the hygienic process within an oral cavity as a skilled artisan would look to other devices in the art for guidance.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,862,771 to Muller in view of U.S. Patent Application Publication US 2003/0113684 to Scott in view of U.S. Patent Application Publication US 2002/0049483 to Knowlton as applied to claim 1 above and further in view of U.S. Patent 5,658,148 to Neuberger et al. Muller, Scott and Knowlton are discussed above, but do not teach the use of delivery ports. Neuberger et al.

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teach a dental brush with an optical fiber (Fig. 2, # 21) that carries radiation from a radiation source and water or liquid passage (Fig. 2, # 22) that carries water or liquid under pressure to the brushhead (Col. 3, lines 25-28). The port clearly cited and its intended use is not a patentable limitation in an apparatus claim. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include an agent delivery means as taught by Neuberger et al. in the invention of Muller/Scott/Knowlton as drugs for use as photosensitizers are pervasive in the photodynamic therapy arts.

Allowable Subject Matter

Claims 17 and 35-42 are allowed.

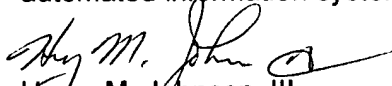
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Henry M. Johnson, III whose telephone number is (571) 272-4768. The examiner can normally be reached on Monday through Friday from 6:00 AM to 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda C. Dvorak can be reached on (571) 272-4764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Henry M. Johnson, III
Primary Examiner
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